

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claims 1- 6. (Cancelled)

Claim 7. (New) A device for aligning the knots at the end rings of springs with the transport of springs from a spring winding machine to a spring interior assembly automatic machine, said device comprising:

a transport star having gripper hands for taking the springs at a winding station of the spring winding machine;

a pair of transport belts for the further transport of aligned springs to the spring interior assembly automatic machine; and

a transfer apparatus for transferring the springs from the transport star to the transport belts, characterized in that the transfer apparatus comprises at least one drivable pair of spaced rotary plates for rotating one of the springs therebetween.

Claim 8.(New) The device of claim 7 wherein the rotary plate pair is drivable by a servo-motor and that a spring held clamped between the rotary plate pair may be transferred to the transport belts at any selectable rotary angle end position.

Claim 9.(New) The device of claim 7 wherein the rotary plates are synchronously rotatably mounted in circular recesses in two rotary disks lying opposite one another, and are driven by a drive motor.

Claim 10.(New) The device of claim 9 wherein the rotary plates mounted in the rotary disks may be driven by the servo-motor via a common toothed belt.

Claim 11.(New) The device of claim 7 wherein the springs are movable by an apparatus out of one of the gripper hands on the rotary star into a position between a rotary plate pair and may be transferred by at least one transfer member out of the rotary plate pair to a position between the two revolving transport belts.

Claim 12.(New) The device of claim 7 wherein the springs are axially compressed between the rotary plates.

Claim 13. (New) A device for aligning the knots at the end rings of springs with the transport of springs from a spring winding machine to a spring interior assembly automatic machine, said device comprising:

a transport star having several gripper arms for moving springs between select locations, each of said gripper arms having a gripper hand for holding a spring;

one of said select locations being a take-over location for removing a spring from a gripper hand;

a pair of transport belts for the further transport of aligned springs to the assembly automatic machine; and

a transfer apparatus for transferring the springs from the transport star to the transport belts, characterized in that the transfer apparatus comprises at least one drivable pair of spaced rotary plates synchronously driven to selectively orient the knots of the spring therebetween.

Claim 14. (New) A device for aligning the knots at the end rings of springs with the transport of springs from a spring winding machine to a spring interior assembly automatic machine, said device comprising:

a transport star having several gripper arms for moving springs between select locations, each of said gripper arms having a gripper hand for holding a spring;

one of said select locations being a take-over location for removing a spring from a gripper hand; and

a transfer apparatus for transferring the spring from one of the gripper hands of the transport star to a position between a pair of rotary plates for changing the orientation of the spring; and

an apparatus for moving the spring between the rotary plates to a position between a pair of transport belts for the further transport of aligned springs to the assembly automatic machine.

Claim 15. (New) The device of claim 14 further comprising means for rotating the rotary plates to change the orientation of the spring.

Claim 16. (New) The device of claim 14 further comprising a heat treating station at one of said select locations.

Claim 17. (New) The device of claim 14 further comprising a knotting device at one of said select locations.

Claim 18. (New) The device of claim 14 further comprising a pair of synchronously driven rotary disks having a common axis and driven by a servo-motor, the rotary plates being mounted in the rotary disks.

Claim 19. (New) A device for aligning the knots at the end rings of springs with the transport of springs from a spring winding machine to a spring interior assembly automatic machine, said device comprising:

a transport star having several gripper arms for moving springs between select locations, each of said gripper arms having a gripper hand for holding a spring;

a transfer apparatus for transferring the spring from one of the gripper hands of the transport star to a position between a pair of synchronously driven rotary plates for changing the orientation of the spring; and

an apparatus for moving the spring between the rotary plates to a position between a pair of transport belts for further transport of the spring to the assembly automatic machine.

Claim 20. (New) A device for aligning the knots at the end rings of springs with the transport of springs from a spring winding machine to a spring interior assembly automatic machine, said device comprising:

a transport star having several gripper arms for moving springs between select locations, each of said gripper arms having a gripper hand for holding a spring;

a pair of spaced-apart transport members, each of the transport members having at least one recess therein;

rotary disks rotatably mounted in the recesses of the transport members for changing the orientation of a spring compressed therebetween; and

an apparatus for removing the spring compressed between the rotary disks to a position between a pair of transport belts for further transport of the spring to the assembly automatic machine.

Claim 21. (New) The device of claim 20 wherein the transport members rotate about an axis.

Claim 22. (New) The device of claim 20 wherein each of the transport members has three recesses.

Claim 23. (New) A method of transporting springs from a spring winding machine to a spring interior assembly automatic machine, said method comprising:

providing a transport star having gripper hands;

taking one of the springs at a winding station of the spring winding machine with one of the gripper hands;

transferring the spring from the gripper hand of the transport star to a position between a pair of spaced rotary plates;

rotating the spaced rotary plates to rotate the spring therebetween to position the knots at the end rings of springs in a desired position;

transporting the spring to a position between a pair of transport belts; and

transporting the spring to the spring interior assembly automatic machine.

Claim 24. (New) The method of claim 23 wherein the spaced rotary plates are driven synchronously.

Claim 25. (New) The method of claim 24 wherein the spaced rotary plates are driven by a belt.

Claim 26. (New) The method of claim 23 wherein the spaced rotary plates are driven by a servo-motor.

Claim 27. (New) A method of transporting springs from a spring winding machine to a spring interior assembly automatic machine, said method comprising:

providing a transport star having gripper hands;

taking one of the springs at a winding station of the spring winding machine with one of the gripper hands;

removing the spring from the gripper hand of the transport star at a take-over location;

transferring the spring to a spring transfer position between a pair of transport belts using at least one crank arm, said crank arm having a pair of spaced rotary plates;

rotating the spaced rotary plates to rotate the spring therebetween to position knots at the end rings of springs in a desired position; and

transporting the spring to the spring interior assembly automatic machine.

Claim 28. (New) The method of claim 27 wherein the spaced rotary plates are driven synchronously.

Claim 29. (New) The method of claim 27 wherein the spaced rotary plates are driven by a belt.

Claim 30. (New) The method of claim 27 wherein the spaced rotary plates are driven by a servo-motor.

Claim 31. (New) A method of transporting springs from a spring winding machine to a spring interior assembly automatic machine, said method comprising:

- providing a transport star having gripper hands;
- taking one of the springs at a winding station of the spring winding machine with one of the gripper hands;
- removing the spring from the gripper hand of the transport star at a take-over location;
- transferring the spring to a spring transfer position having a pair of spaced rotary plates;
- rotating the spaced rotary plates to rotate the spring therebetween to position knots at the end rings of springs in a desired position; and
- further transporting the spring to the spring interior assembly automatic machine.